

Notice of Allowability

Application No.

10/776,484

Examiner

Mark Blouin

Applicant(s)

KASIRAJ ET AL.

Art Unit

2653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to ____.
2. ☒ The allowed claim(s) is/are 1-17.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date ____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>2/10/04</u> | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other ____. |

Detailed Action

Reasons for Allowance

1. Claims 1-17 are allowed.
2. The following is an examiner's statement of reasons for allowance:

This application is for a magnetoresistive sensor.

- **Claim 1** specifies magnetoresistive sensor, which requires:

"...a second antiferromagnetic layer exchange coupled to the stabilizing layer, the second antiferromagnetic layer having a blocking temperature less than the blocking temperature of the first antiferromagnetic layer, the stabilizing layer and the free layer having nonlongitudinally-oriented magnetic domains magnetically-coupled across the second spacer layer in the absence of an external magnetic field and the absence of a sense current."

These features, in combination with the other features of Claim 1, are not anticipated by, nor made obvious over, the prior art of record.

- **Claim 11** specifies magnetoresistive sensor, which requires:

"...a second antiferromagnetic layer on and exchange coupled to the stabilizing layer and substantially fixing the orientation of the nonlongitudinally-oriented magnetic domains in the stabilizing layer in the absence of an external magnetic field and the absence of a sense current, the second antiferromagnetic layer having a blocking temperature less than the blocking temperature of the first antiferromagnetic layer."

These features, in combination with the other features of Claim 17, are not anticipated by, nor made obvious over, the prior art of record.

- **Claim 17** specifies magnetoresistive sensor, which requires:

"...applying a setting current in a direction substantially perpendicular to all of said layers in the presence of a temperature above T_{bl} but below T_{bh} to generate a vortex magnetic field in the third ferromagnetic layer; and reducing the temperature to below T_{bl} while the setting current is applied to cause the magnetization generated in the third ferromagnetic layer by said vortex magnetic field to be fixed by exchange coupling with the second layer of antiferromagnetic material."

These features, in combination with the other features of Claim 17, are not anticipated by, nor made obvious over, the prior art of record.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Blouin whose telephone number is 571-272-7583. The examiner can normally be reached on M-F from 6:00 to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch, can be reached on 571-272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Mark Blouin
Patent Examiner
Art Unit 2653
March 31, 2006

A. J. HEINZ
PRIMARY EXAMINER
GROUP ~~2500~~ 2627
